

MULTIMEDIA



UNIVERSITY

STUDENT IDENTIFICATION NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2016/2017

BDS2014 – Database and Systems Analysis (All sections / Groups)

29 MAY 2017
9:00 am - 11.00 am
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages [excluding the cover page] with 4 Questions only.
2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

QUESTION 1

- a. List any **FIVE (5)** elements of good website design practice. (5 marks)
- b. A public library loans books to members who pay a monthly membership fee of RM30.00. Prior to be a member, applicant has to register himself by providing his particulars to the librarian. Librarian will then issue a membership card to the new member and update the membership record.

Members are free to borrow items based on their respective loan limits and need to pay a fine should an item be returned late. In most cases, members will search for available book titles from an online database system. They will obtain the details of the item that they require. They then go to the library and physically retrieve the item and bring them to the loans desk together with their membership card. The librarian will check the members' details and record the loan of the item and issue a date to be returned. This will be updated in the loans record.

Later when a member returns the item, the librarian will first have to check the due date of the item from the loans record. If fines are to be paid, they are calculated and paid by the member. This will be recorded in a fines record. A receipt will also be issued to the member. Thereafter, all return details will be updated in the loans record.

Based on the scenario provided, complete the following tasks using the Yourdon notation:

- i) Develop a logical context data flow diagram (DFD) for the scenario. (6 marks)
- ii) Derive a logical level-0 data flow diagram for ALL the processes mentioned in the scenario. This level-0 derivation must be consistent with the context diagram developed in part b(i). All diagrams must be clearly labelled and notated. (14 marks)

(Total: 25 marks)

Continued...

QUESTION 2

- a. Consider the following scenario, concerning employee records:

| Employee Record | | | | |
|---|---------------|-------------|----------------|------------|
| Employee Number : TRS-019011 | | | | |
| Employee Name : John Samson | | | | |
| Employee Address : 20 Jalan Tembaga, 75600 Melaka | | | | |
| Date of Birth : 05/12/1968 | | | | |
| Courses Attended | | | | |
| Course Number | Description | Location | Date Attended | Pass Level |
| B121 | Business Acct | Ayer Keroh | 11/10/2008 | B |
| B151 | Info Tech | Ayer Keroh | 12/11/2007 | C |
| C123 | Commerce | Bukit Katil | 19/11/2002 | A |
| Post Information | | | | |
| Job Title | Dept Code | Dept Name | Date Appointed | Salary |
| Accounts Executive | A312 | Accounts | 01/09/1998 | 1800.00 |
| Business Analyst | IT05 | IT Services | 01/02/2006 | 3200.00 |

For this scenario, derive relations in UNF, and normalise it from UNF to 3NF. Explain all steps taken to normalise the relations and clearly state any assumptions made (if necessary). (7 marks)

- b. Based on the set of 3NF relations derived in (a), draw a **complete entity relationship (ER) diagram**. Make sure that all the entities, attributes, keys, relationships and connectivities included in your ER diagram. (6 marks)

- c. The current system costs approximately RM85,000 per annum to operate with a life span of 5 years. A proposed system has been evaluated and has chalked up the following costs:

- Furniture: RM16,000
- Four units of PCs at RM6,000 each
- Twelve units of laptops at RM4,500 each
- Cost of moving equipment: RM40,000
- Networking: RM13,000,...
- File conversion: RM11,000
- Maintenance: RM19,000 per annum
- Provisions: RM10,500 per annum
- Insurance: RM12,000 per annum

Continued...

- i) Based on the above figures, determine the Annual Cost for the proposed system. (3 marks)
- ii) Calculate the costs for both systems over a five-year period. (5 marks)
- iii) Draw a break-even analysis graph. (2 marks)
- iv) If possible, determine the break-even point. (2 marks)

(Total: 25 marks)

QUESTION 3

- a. Describe any FIVE (5) advantages of the Database Management Systems (DBMS). (10 marks)
- b. Several organizations have started to accept agile software development methodologies for their systems development attempt. A popular approach is the Extreme Programming (XP) methodology which is said to be ideal for managing complex projects.

With the aid of a diagram, briefly explain SIX (6) features or benefits of the XP methodology in systems development. (15 marks)

(Total: 25 marks)

QUESTION 4

Based on the following table, write appropriate SQL statements to carry out the following tasks:

ITEM Table

| ITEM_ID | ITEM_DETAILS | COST_PRICE | SALES_PRICE | COUNTRY_MADE |
|---------|--------------|------------|-------------|--------------|
| 80001 | Serial mouse | 10.00 | 12.00 | INDONESIA |
| 80009 | 150W speaker | 55.00 | 45.00 | MALAYSIA |
| 80012 | Trackball | 42.80 | 56.00 | FRANCE |
| 80013 | LCD screen | 1080.00 | 1210.00 | CHINA |
| 80891 | UPS 9000 | 510.25 | 499.85 | SINGAPORE |

Continued...

- (a) Create the ITEM table, using the following table definition: (7 marks)

| Field Name | Data Type | Size | Remarks |
|--------------|-----------|------|-------------|
| ITEM_ID | Number | - | Primary key |
| ITEM_DETAILS | Text | 50 | Required |
| COST_PRICE | Number | - | - |
| SALES_PRICE | Number | - | - |
| COUNTRY_MADE | Text | 20 | - |

- (b) Alter the size of the ITEM_DETAILS field from the present 50 characters to 60 characters. (2 marks)

- (c) Enter the details of a new record that is listed below into the ITEM table. (3 marks)

| ITEM_ID | ITEM_DETAILS | COST_PRICE | SALES_PRICE | COUNTRY_MADE |
|---------|---------------|------------|-------------|--------------|
| 80056 | Laser Printer | 450.34 | 478.50 | CHINA |

- (d) Update the COST_PRICE of 'ITEM_ID: 80009' to '105.50'. (3 marks)
- (e) Select all the details of items that are NOT from MALAYSIA. (2 marks)
- (f) Obtain the average SALES_PRICE. (1 mark)
- (g) Select the ITEM_ID, ITEM_DETAILS, SALES_PRICE and COST_PRICE of items that sell for at least RM200.00. The results are to be sorted out according to the ITEM_ID in descending sequence. (3 marks)
- (h) Select all the details of items that cost not more than RM400.00 and are made in SINGAPORE. (3 marks)
- (i) Delete the entire ITEM table. (1 mark)

(Total: 25 marks)

End of Paper